

From: [Enders, Jhana](#)
To: [Jaramillo, Jeanie](#)
Cc: [Young, Patrick](#); [Ruhl, Christopher](#)
Subject: Re: Update on phosphine case
Date: Monday, January 30, 2017 12:33:24 PM

We did have a day where the results were 0.1 ppm (from the master bedroom closet) but that level then went to less than 0.1 (the UC agreed upon level for clearance).

Sent from my iPad

On Jan 30, 2017, at 12:22 PM, Jaramillo, Jeanie <Jeanie.Jaramillo@ttuhsc.edu> wrote:

Jhana,

Dr. Martin, our toxicologist at the poison center, was asking me today if phosphine levels were detected from the clothing bags. Apparently, the family's clothing was bagged...perhaps at the ER. He thought you all were planning to test it to see if levels were detected, and if so, what they were. If you have that information, we'd appreciate it being shared.

We are slowly getting info regarding the dog that died. The cat was apparently sent straight to the landfill.

*Dr. Jeanie Jaramillo-Stametz
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From: Enders, Jhana [<mailto:Enders.Jhana@epa.gov>]
Sent: Wednesday, January 11, 2017 8:37 PM
To: Jaramillo, Jeanie <Jeanie.Jaramillo@ttuhsc.edu>
Cc: Young, Patrick <young.patrick@epa.gov>; Ruhl, Christopher <Ruhl.Christopher@epa.gov>
Subject: Re: PPE for embalmer
I share your love of science. Interesting read. Thanks for the info.

Sent from my iPad

On Jan 11, 2017, at 6:36 PM, Jaramillo, Jeanie <Jeanie.Jaramillo@ttuhsc.edu> wrote:

Thank you, Jhana.

I am a science nerd posing as a pharmacist who works in poison control!
So, I hope I'm not pushing information on you that you have no interest in

or do not wish to read!

I've had several people now ask me how that question was answered and you know how we in the medical field like for everything to be "evidence-based". The only info that I have seen about post-mortem precautions following phosphine toxicity was on the NIOSH guidance to which Patrick sent a link

(https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750035.html).

Under the section "Recovery and On-Site Morgue", it simply states "wear PPE until all remains are deemed free of contamination."

I found Dr. Schwartz's recommendation to the ME interesting and thought-provoking since he specifically recommended avoidance of heat/cautery devices due to phosphine's flammable and explosive properties. In fact, NIOSH states that phosphine can "ignite spontaneously on contact with air" or may be "ignited by heat, sparks, or flames".

However, in a 1998 EPA R.E.D. document

(<https://archive.epa.gov/pesticides/reregistration/web/pdf/0025fact.pdf>)

on aluminum and magnesium phosphide, one paragraph reads, "in summary, aluminum phosphide and magnesium phosphide are expected to degrade rapidly in the environment to aluminum hydroxide and magnesium hydroxide and phosphine, the toxicant of these pesticides. It appears that phosphine will degrade in days and is at low risk for contaminating ground or surface waters. Phosphine near the soil surface is expected to diffuse into the atmosphere and be removed via photodegradation. Phosphine trapped beneath the soil surface will bind to soil, inhibiting movement, and be oxidized to phosphates."

In the same document, it is stated that "phosphine in the atmosphere is rapidly degraded. The half-life in air is approximately five hours with the mechanism of degradation being photoreaction with hydroxy radicals. The dark half-life is approximately 28 hours. The expected reaction products of phosphine in air are oxyacids of phosphorous and inorganic phosphate which are non-volatile."

If there were truly a risk of post-mortem release of phosphine following inhalational exposure, I would think universal precautions would be inadequate as these precautions are designed more to protect against "bodily fluids". It would have been great if someone had been able to go to the mortuary and measure for any levels (at least confirmation that it was non-detectable which is what we expect.) I suppose the "evidence" we have is that (to my knowledge, and I haven't done a thorough review of the literature as of yet), no known detrimental post-mortem exposures have occurred.

Something to ponder....

Dr. Jeanie Jaramillo-Stametz

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From: Enders, Jhana [<mailto:Enders.Jhana@epa.gov>]

Sent: Wednesday, January 11, 2017 5:40 PM

To: Jaramillo, Jeanie <Jeanie.Jaramillo@ttuhsc.edu>

Cc: Young, Patrick <young.patrick@epa.gov>; Ruhl, Christopher
<Ruhl.Christopher@epa.gov>

Subject: Re: PPE for embalmer

From what I heard, South Plains Forensics (Lubbock) recommended
'Universal Precautions'

Sent from my iPad

On Jan 10, 2017, at 11:43 AM, Jaramillo, Jeanie
<Jeanie.Jaramillo@ttuhsc.edu> wrote:

Once we shared information regarding concerns of
embalmer, we did not hear anything other than "it was
taken care of" and that the embalmer simply wanted to
know if PPE was recommended. I understand that there
should have been little or no risk as this was an inhalational
exposure and days had passed. I am wondering how the
question was answered as this could, in theory, be
something we are asked again. Do either of you know if he
was told that no PPE was necessary or if any other PPE
suggestions were made?

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